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ARTICLE APPEARED ON PAGE A1
NEW YORK TIMES
4 April 1987

U.S. Uses Seismic Devices in China To Estimate Size of Soviet A-Tests

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Special to The New York Times

WASHINGTON, April 3 — The United States is using monitoring devices in China to improve estimates of the size of Soviet nuclear tests, according to Defense Department documents and interviews with Administration officials.

The seismic devices, which are manned by Chinese workers, have been installed under an American-Chinese program to study earthquakes. One device is in the Xinjiang Uygur Autonomous Region, near the Soviet nuclear test site, and the Defense Department will use data from this and other instruments to improve United States monitoring abilities.

The data will "improve our yield estimation" of Soviet nuclear blasts, according to a budget document prepared last year by the Defense Advanced Research Projects Agency, part of the Pentagon.

The document also said the data would be useful in improving American "discrimination capability" to distinguish Soviet nuclear tests from earthquakes. Such an ability would be necessary to monitor a low limit on the size of underground tests or a total ban on testing.

The document was obtained through the Freedom of Information Act by William M. Arkin of the Institute for Policy Studies, a nongovernmental research center, and was later made available to The New York Times.

Initial Suggestion Last Year

Some American Government experts have long been interested in establishing a way to monitor Soviet nuclear tests from China. But China has resisted overt efforts at gathering intelligence about Soviet blasts.

Last year, specialists at the Energy Department, which manages the nuclear testing program, expressed interest in negotiations with the Chinese to set up an advanced array of sensitive seismic devices in China to monitor Soviet tests, particularly blasts of very low yield. The State Department advised against such a move, arguing that the proposal was politically sensitive for the Chinese and that Washington should adopt a go-slow approach.

The Energy Department's plans were disclosed in budget documents last year before the United States and China decided whether to conduct such talks. The disclosure distressed the Chinese, and the Energy Department effort was dropped.

Despite this controversy, China and the United States proceeded with a separate project to set up nine monitoring stations in China, primarily for studying and predicting earthquakes. The network was completed last year — using equipment made by China, the United States and other Western nations — under an agreement between Chinese Government seismologists and the United States Geological Survey.

China and the United States share the cost of the network, and the Defense Research Agency pays most of the American costs.

"We look on it as a scientific research project for the study of earthquakes," said David P. Russ of the Geological Survey. "If a contributor has some other purposes, that is his business. It is not the primary purpose."

Mr. Russ added all of the data would be made public.

Another Device in Manchuria

One device is in Urumqi in Xinjiang, in the northwestern part of China. The device is about 600 miles from the Soviet test site at Semipalatinsk in Central Asia. Another device, in Manchuria, will allow the United States to learn more about the geology of the Soviet Union.

American officials said that although the network was completed last fall, minor technical problems were still being worked out. The officials said there was a delay of several months in receiving and analyzing the data from China. As a result, the United States has not had a chance to evaluate data on recent Soviet tests, which began in February, when the Russians ended their 18-month moratorium.

Today, the Soviet Union conducted its third nuclear test since the end of its moratorium.

In 1981, it was reported that the United States and China were secretly operating an electronic intelligence-gathering station in China to monitor signals from Soviet missile tests. That secret project is different from the installation of the seismic devices, which is being done openly and primarily for scientific research.

The data from China will supplement information gathered from seismic research installations in Norway, Pakistan, Turkey, South Korea, India and Japan, among other countries. In addition, the Air Force operates secret installations around the world to monitor Soviet tests.

Issue of Treaty Compliance

Data on the size of Soviet tests are important because of the need to determine whether the Soviet Union is complying with two treaties from the 1970's that set a limit of 150 kilotons for underground nuclear explosions. A kiloton represents the explosive force of 1,000 tons of TNT.

Many experts inside and outside the Government say the Russians are complying with the treaties, which the United States has not ratified. The Reagan Administration has charged that it is "likely" that Moscow has violated the treaties, but it is re-examining the issue.

The data are also important because such information may enable the United States to make more precise estimates of Soviet tests using devices outside the Soviet Union. The Administration has said the monitoring of the treaties should be improved by on-site monitoring at the Soviet test site using a cable inserted in the ground. But some experts say that such intrusive monitoring techniques are not necessary and that improvements in seismic monitoring outside the Soviet Union and possible installation of seismic devices inside the Soviet Union would suffice.

In other efforts to improve seismic monitoring abilities, the Defense Research Agency has supervised an experiment about 600 miles off the Kamchatka Peninsula on the Pacific coast of the Soviet Union.

In that experiment, the Glomar Challenger ship was used to drill a hole in the ocean floor and install a seismometer, according to the budget document from the agency. The purpose of the experiment was to determine if devices in the ocean floor could monitor a test ban or a low limit on the force of nuclear tests.

Government officials said the experiment established that the ocean floor sites were "quiet" enough — that is, free of seismic background noise — that this could be done.

The New York Times/April 4, 1987

Devices in the Xinjiang region help measure Soviet nuclear tests.

The Defense Research Agency is also considering an experiment in which the United States could conduct an underground test in Nevada "in rock believed to be very similar to that at the Soviet test site," the budget document says. Measurements would be used to adjust estimates of the size of Soviet tests. The experiment has been deferred in the past for lack of money.

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